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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/008,599

12/03/2001

Dmitry Ponomarenko

BKE-004

2470

21323

7590

11/04/2004

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EXAMINER

LEE, PATRICK J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/008,599</p>	<p>Applicant(s)</p> <p align="center">PONOMARENKO, DMITRY</p>	
	<p>Examiner</p> <p align="center">Patrick J. Lee</p>	<p>Art Unit</p> <p align="center">2878</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-10,12-19,25-33,39-44,46-52,55-58,61-69 and 71-102 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-10,12-19,25-33,39-44,46-52,55-58,61-69 and 71-102 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0204</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This action is in response to amendment filed September 23rd, 2004.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-5, 8-10, 12, 19, 39-44, 46, 50-52, 55-56, 74-76, 79-80, 82-83, 86-88, & 98-100 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,473,712 to Blow et al.

Blow et al disclose an optically controlled switch comprising lasers (18, 21, 26), couplers (8, 22, 24), and optical loop (6).

With respect to claims 1, 4-5, 10, 12, 19, 39-42, 50-52, 55-56, 79, 82-83, & 86-88, Blow et al disclose an interferometer (2) as a logical AND gate (see abstract) comprising coupler (24) as an optical junction with two optical inlets that receive incoming light beams from lasers (18, 21, & 26). Coupler (24) provides an optical outlet to emit an outgoing beam of light that is a superposition of the beams that enter into the coupler (24). A detector as an optoelectric converter is not explicitly disclosed, but is an inherent part of the device in order to monitor the change in signal at fiber portion (4). The intensity of the beams is dependent on the relative phase shift, disclosed to be potentially 90° or 180°, depending on the circumstances (see column 3, lines 5-15).

With respect to claims 8-9 & 98-99, lasers (18, 21, & 26) comprise an electro-optic converter coupled to one of the optical inlets into coupler (24).

With respect to claims 43 & 46, a phase shift and amplitude of the signal received will cause the AND gate to be fully switched (see column 3, lines 11-15).

With respect to claim 44, one distinctive characteristic that the detector is looking for is light of a certain wavelength (1.30 μm or 1.31 μm) (see column 3, lines 12-15).

With respect to claims 74-76, Blow et al disclose coupler (22) as another optical junction to allow for an additional superposition of a light beam.

With respect to claims 80 & 100, Blow et al disclose the interferometer (2) to be a logical AND gate as a Boolean operator (see abstract).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6-7, 57-58, & 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,473,712 to Blow et al.

With respect to claims 6-7 & 57-58, Blow et al do not explicitly disclose Fresnel zones, but such is a method of determining interference of a signal. To modify the teachings of Blow et al to incorporate Fresnel zones would have been obvious to one of ordinary skill in the art in order to gain accuracy in the detection of the signal to prevent false switching of the device.

With respect to claim 102, Blow et al disclose the elements as claimed but does not explicitly disclose the processor as having two layers. Such would have been obvious to one of ordinary skill in the art as a mere matter of obvious design choice in order to allow for ease of manufacture by disposing the parts in close proximity.

With respect to claims 81 & 101, Blow et al do not explicitly disclose the fact that the operations are non-Boolean operations, but such would have been a matter of obvious design choice as intended use in order to apply for a specific application.

6. Claims 13, 15-18, 30-33, 67-73, 77-78, & 89-97 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,473,712 to Blow et al in view of US 5,225,887 to Lipson et al.

With respect to claims 13, 67-68, & 89, Blow et al does not explicitly disclose the use of a light separator, but such is disclosed by Lipson et al. Lipson et al disclose an optical interferometer system comprising two fibers (14, 15) as optical inlets, a fiber (16) as an optical outlet, and a coupler unit (22) as an optical junction where two beams are superimposed. Lipson et al disclose a coupler unit (42) with fibers (33-35) and filters (41, 43) to serve as a light separator that divides light based on the wavelength. To modify the teachings of Blow et al with those of Lipson et al would have been obvious to one of ordinary skill in the art, as it would allow the device to be accurate regardless of other environmental noise sources (see column 2, lines 48-50).

With respect to claims 15-18, 69-73, & 90-97, the modified Blow et al does not explicitly disclose the light separation techniques as claimed. It is disclosed that filter elements (41, 43) can be polarization sensitive (see Lipson column 14, lines 63-66).

The use of dispersive materials, beam splitters, and birefringent materials are known and would have been obvious to modify the teachings accordingly to improve the ability of the device to accurately separate and detect light components.

With respect to claims 30-33 & 77-78, the modified Blow et al disclose the use of delay element (Lipson 180) in another embodiment to ensure that back-reflection does not occur in the system.

7. Claims 25-29 & 61-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,473,712 to Blow et al in view of US 5,999,304 to Sanders et al.

With respect to claims 25-29 & 61-66, Blow et al do not explicitly disclose the use of a phase shifter, but such is taught by Sanders et al. Sanders et al disclose a fiber optic device comprising phase modulator (19), light sensor (11), and photodetector (14). The incorporation of the phase shifter would allow for increase sensitivity of the device (see column 1, lines 59 - column 2, line 15) and allow for increased control of light emitted by the wave sources.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 4-10, 12-19, 25-33, 39-44, 46-52, 55-58, 61-69, & 71-102 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick J. Lee
Examiner
Art Unit 2878

PJL
October 13th, 2004


Stephone B. Allen
Primary Examiner